Stormwater Erosion and Sediment Control For Small Parcel Construction

Small Construction Projects Can Cause Big Erosion Problems

Construction of relatively small site developments can cause large amounts of sediment to be transported to our lakes and streams. Surface runoff from construction sites carries suspended solids that pollute water and damage fish and wildlife habitat.

Many stormwater management professionals in the Puget Sound basin assert that the construction of single family homes and small commercial developments contributes significantly to erosion problems in the area. This report summarizes erosion and sediment control requirements for small parcel projects.

A recent Metro study of single family residential construction sites concluded that a minority of sites cause a majority of the problems. Only 10 percent of the sites surveyed had water quality problems, but nearly a third of these were located within 50 feet of a water body.

Ecology's Technical Manual defines small parcels as sites that involve:

- *Individual, detached, single family residences and duplexes*
- *Creation or addition of < 5000 square feet of impervious area (driveways, parking lots, etc.)*
- *Land disturbing activities of < 1 acre*

A Key Resource: Ecology's Technical Manual

In an effort to improve water quality in the region, the Puget Sound Water Quality Management Plan was adopted in 1987. One goal of the plan, in conjunction with local and federal programs, is to reduce pollutant discharges from stormwater caused by development and construction activities. The stormwater element of the plan directed the Washington State Department of Ecology (Ecology) to establish minimum requirements for controlling stormwater discharges.

Ecology's *Stormwater Management Manual for the Puget Sound Basin* (Technical Manual) lays out a series of minimum requirements for stormwater control, presents best management practices (BMPs) that may be used to meet the minimum requirements, and describes how to show compliance with the site specific minimum requirements. For small parcels the owner/developer must prepare a small parcel erosion and sediment control plan.

The Technical Manual is a key resource for local jurisdictions and developers. Volume II of the Technical Manual is the source of information on construction-related erosion and sediment control

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as opposed to permanent stormwater controls). It contains a description of the erosion and sedimentation process, BMPs for problem areas on construction sites, and standards and specifications for erosion and sediment control. The Technical Manual defines small parcels as sites that meet the following conditions:

- Individual, detached, single family residences and duplexes;
- Creation or addition of < 5000 square feet of impervious area (driveways, parking lots, etc.);
- Land disturbing activities of < 1 acre.

Erosion and Sediment Controls for Small Parcels

Erosion and sediment can be controlled by implementing BMPs, which are physical, structural, and managerial practices that prevent erosion and trap sediment. Generally, several types of BMPs are required on any site for effective erosion and sediment control. There are three broad categories of construction-related BMPs for controlling erosion and sediment on small parcel developments.

Cover practice BMPs prevent erosion by protecting the soil surface from rainfall and runoff. Prevention of erosion is the most preferable and cost-effective approach. These BMPs include protection of existing vegetation, temporary covering of exposed soil by mulching, matting, or covering, and permanent site stabilization by seeding, topsoiling and sodding.

Structural Practice BMPs are structural controls that either reduce erosion or keep sediment on the construction site. Examples of these BMPs include stabilized construction entrances, filter fences, sediment ponds, and berms.

Management Measures are construction management methods that prevent or reduce erosion potential and ensure the proper functioning of BMPs. Careful construction management can dramatically reduce the costs associated with erosion and sediment problems.

What Are the Requirements for Erosion and Sediment Control?

Under the Puget Sound program five minimum requirements are specified by Ecology for small parcel construction. These requirements, summarized below, address when, where and what kind of erosion and sediment controls to use. The way you show compliance with these minimum requirements is to put together a small parcel erosion and sediment control plan, submit it for local approval, and then carry it out during construction. (Note: see what's in a small parcel erosion and sediment control plan on back page.)

The five small parcel minimum requirements are:

#1-Construction Access Route: Limit access to site to one route when possible, and stabilize the entrance (e.g. gravel construction entrance).

To prevent vehicles and equipment from tracking sediment and mud off the site, apply gravel or crushed rock to the driveway area and restrict traffic to this one route. This will keep soil from sticking to tires and stop soil from washing off into the street. Carry out periodic inspections and maintenance including washing, top-dressing with additional stone, reworking and compaction. Plan for periodic street cleaning to remove any sediment that may have been tracked out. Sediment should be removed by shoveling or sweeping and transported to a suitable disposal area where it will not be re-eroded.

#2-Stabilization of Denuded Areas: Limit the number of days that soil is exposed to two days or less between October 1 and April 30, and limit to seven days between May 1 to September 30. Stabilize denuded areas by implementing soil covering BMPs (e.g. mulching, plastic covering,

sodding).
Exposed soils are the most prone to erosion due to rainfall and runoff. Vegetation helps protect the soil from these forces, and provides natural erosion control. Plan construction to limit the amount of exposed area, and avoid grading activities during the rainy season (November through March) as much as possible. Clearing limits should be clearly marked and kept as small as possible.

Once construction is completed, the site must be permanently stabilized with seeding and plantings, topsoiling if needed, or sodding.

#3-Protection of Adjacent Properties: Keep sediment on-site by using structural and source control BMPs (e.g. vegetative buffer strips, sediment barriers, management of soil banks, excavated basement soils, etc.).
Wherever possible, preserve a buffer of existing vegetation around the site boundary. This will help to decrease runoff velocities and trap sediment suspended in the runoff. Other structural controls such as filter fence or straw bale barriers should also be used to filter runoff and trap sediment on-site. Check the Technical Manual for a complete listing of potential BMPs, and choose the ones that make sense for your site.

When excavating basement soils, move the soil a reasonable distance behind the curb, such as in the backyard or side yard area. This will increase the distance eroded soil must travel to reach the storm sewer system. Soil piles should be covered with plastic until the soil is either used or removed. Piles should be situated so that sediment does not run into the street or adjoining yards.

Backfill basement walls as soon as possible and rough grade the lot. That will eliminate the large soil mounds, which are highly erodible, and prepare the lot for temporary cover. After backfilling remove excess soil from the site quickly to eliminate any sediment loss from surplus fill.

#4-Maintenance: *Maintain erosion and sediment control BMPs through regular inspection.*
Regular maintenance, though often-overlooked, is extremely important for the proper operation of structural BMPs. At a minimum, BMPs must be inspected monthly or following each runoff producing storm. Consult the Technical Manual and local guidelines for maintenance and repair procedures.

#5-Other BMPs: *Use additional BMPs as required by the local plan approval authority to mitigate effects of increased runoff.*
You'll need to check for additional requirements related to erosion and sediment runoff control. Some local jurisdictions may require additional BMPs to reduce the offsite impacts caused by increased runoff from construction sites. In addition, you'll need to see if there is an adopted and implemented basin plan that applies to the project site, or if there are any special water quality concerns present.

This filter fence prevents sediment from leaving the construction site

What's in a Small Parcel Erosion and Sediment Control Plan?

- Description of project, existing site conditions, and adjacent areas in relation to potential erosion and sediment problems.
- Discussion of how each of the five small parcel erosion and sediment control requirements are specifically met.
- List of all BMPs to be implemented, with maintenance procedures.
- Vicinity map clearly locating property.
- Accurate location map of the proposed site structures and access.
- Existing site features and water quality sensitive areas (if appropriate).
- Stockpile areas.
- All applicable setback requirements.
- Location of all selected BMPs.

For more information on municipal stormwater requirements, or if you have special accommodation needs, please call the Urban Nonpoint Management Unit of Ecology's Water Quality Program at 206/438-7058. The agency's telecommunications device for the deaf (TDD) number is 206/438-8721. Ecology is an Equal Opportunity and Affirmative Action Employer.

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